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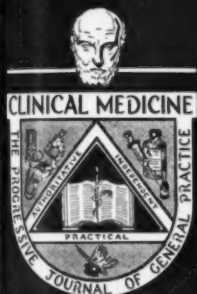
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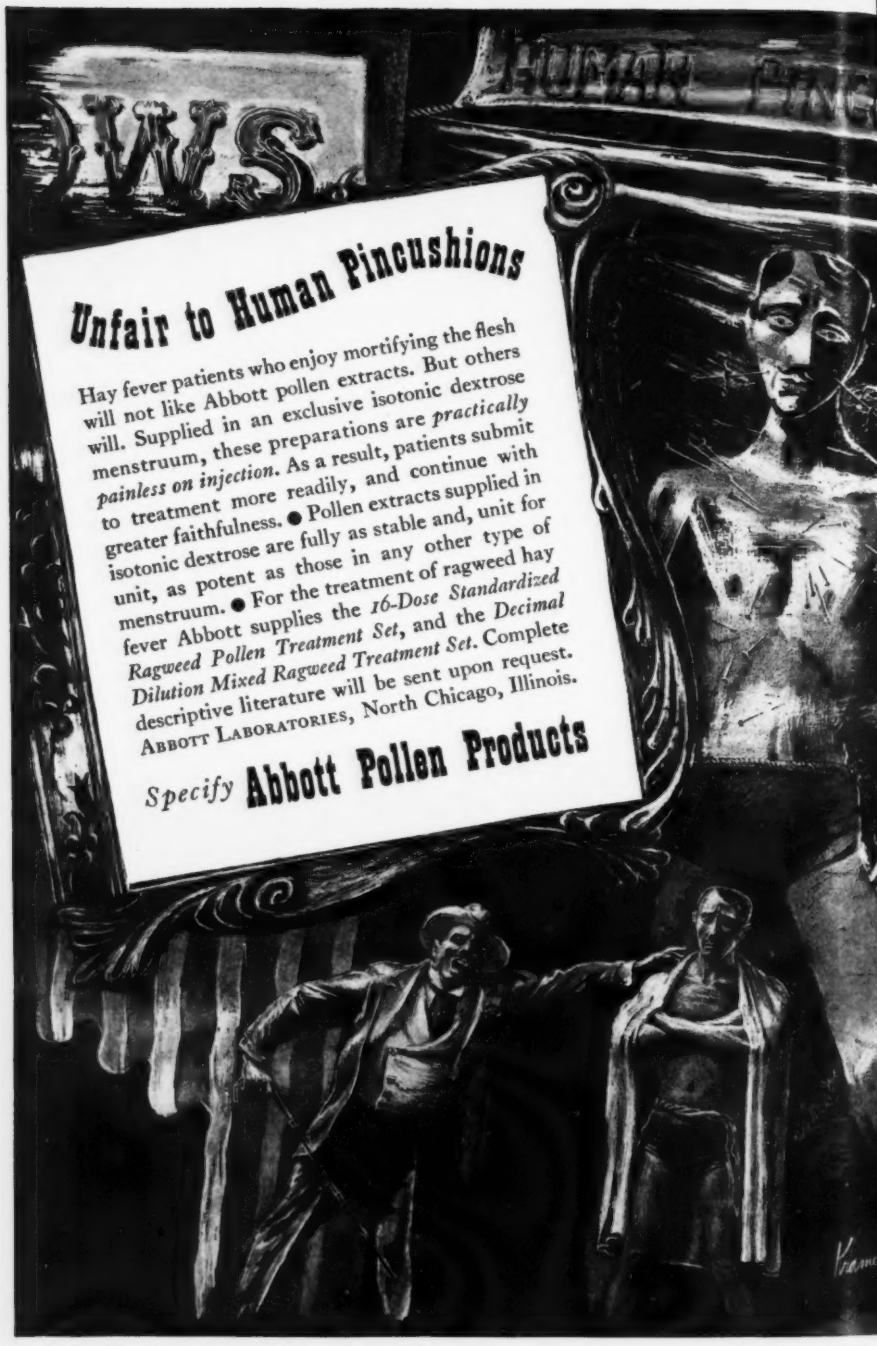
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VOLUME 51

NUMBER 5





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VOLUME 51

MAY, 1944

NUMBER 5

The Significance of Breathlessness

By LIONEL BERK, M.B., Ch.B., B.Sc., Ph.D.

Department of Clinical Medicine, University of Cape Town, South Africa

CHRISTIE¹ has defined dyspnoea as difficult, painful, bad, or disordered breathing, or simply as breathing associated with effort. This definition is more accurate than the usual ones, in that it correctly allows an objective as well as a subjective evaluation of the symptom.

Three main types of breathlessness are met with under disease conditions, corresponding to the three main stimuli to respiration.

1) *Functional Dyspnoea*: This occurs where respiration is stimulated by the higher centres of the brain. In this type of breathlessness dyspnoea occurs on mild exertion but also at rest. The respirations are rapid and shallow, but irregular in rhythm and depth. Gasping breaths, frequent deep sighs, and complaints of suffocation and not being able to get enough air into the chest are frequently encountered. True hyperventilation may occur, leading sometimes to tetany. The breath cannot be held for more than an average of about 20 seconds, and forced breathing, which induces apnoea in normal people, often fails in these patients (Wood²).

Functional dyspnoea is seen chiefly in the effort syndrome, in anxiety neuroses, and in hysteria.

2) *Chemical Dyspnoea*: The only chemical stimulus of importance in respiration is acidosis, including carbon dioxide excess. The dyspnoea that arises under the influence of this chemical stimulus shows mainly an increase in the depth of breathing, with very little change in the rate. The result of this

is the typical air hunger seen in diabetic ketosis.

The causes of chemical dyspnoea are therefore, those conditions which give rise to acidosis. The commonest of these are diabetic ketosis, emphysema and pneumokonioses, and poisoning with acids. In renal failure, such as occurs in chronic nephritis, chemical dyspnoea may be seen.

Oxygen lack does not lead to important increase in respiration and the dyspnoea seen under conditions of anoxaemia is attributable to the effects of oxygen lack on the myocardium. The dyspnoea of anoxaemia thus, is actually a cardiac dyspnoea, and not a chemical dyspnoea at all.

3) *Reflex Dyspnoea*: This occurs when the breathing is stimulated by reflexes arising chiefly in the lung. There are special nerve endings in the lungs which are stimulated by change in tension. Distension of the lungs stimulates these and causes reflex inhibition of inspiration, and expiration is initiated. This is known as the Hering-Breuer reflex, stimulation of which decreases the depth of respiration and increases the rate. Reflex dyspnoea therefore shows rapid shallow breathing.

Reflex stimuli affecting respiration may arise also in other parts of the body, e.g. in moving parts (Harrison³) and in the heart (Berk⁴).

Hering-Breuer Reflex

There are various mechanisms by which the Hering-Breuer reflex is stimulated. All these mechanisms have in common the feature that the lungs are

put on the stretch. This stretch is caused by:

1. *Pulmonary congestion.* Here the lungs are rigid, as has been shown both in experimental animals (Drinker, Peabody and Blumgart⁵) and in man (Christie and Meakins⁶).

2. *Pulmonary atelectasis.* The increased pull on the uncollapsed portion of the lung is seen in the shift of the heart and mediastinum to the affected side, the raising of the diaphragm and the drawing together of the ribs.

3. *Pneumonic consolidation.* The inflamed congested portion of the lung is rigid.

The most important of these causes of stimulation of the Hering-Breuer reflex is pulmonary congestion. Thus reflex dyspnoea arises when pulmonary congestion is present and is characterized by rapid shallow respiration.

Heart Failure

Cardiac failure is the commonest cause of pulmonary congestion and cardiac dyspnoea is reflex in type. Pulmonary congestion arises in cardiac failure when the left side of the heart fails (White⁷). *Dyspnoea is a cardinal feature of left-sided heart failure* and therefore bears no direct relation to general congestion, with its distended neck veins, enlarged liver and oedema, which appears only when the right side of the heart fails.

Paroxysmal cardiac dyspnoea results from sudden intense pulmonary congestion (Weiss and Robb⁸) and is relieved by depressing the reflexes by morphia or by reducing the blood volume by venesection.

Anaemia

Anaemia produced dyspnoea because of anoxaemia. As noted above this dys-

pnoea results from the effects of oxygen lack on the heart, so that the dyspnoea of anaemia is really a cardiac dyspnoea and therefore is reflex in type.

The anoxaemia of high altitude gives rise to dyspnoea by the same mechanism.

Pneumothorax, hydrothorax and poison gases such as phosgene lead to congestion of the lungs. The dyspnoea of these conditions is therefore reflex in origin.

Mechanical factors are also important in the causation of dyspnoea, giving rise to the necessity for increased effort to accomplish respiration. Thus tracheal obstruction and bronchospasm are of great importance. Alterations in posture affect the ease with which the accessory muscles of respiration can be brought into play and are important factors in the phenomenon of orthopnoea in particular. Pleuritic or similar pain also acts as a mechanical factor in creating respiratory difficulty.

Obstruction to the air passages, as in asthma, leads furthermore to impairment of gaseous interchange within the lungs, carbon dioxide accumulates and an additional chemical factor in the dyspnoea results.

Cardiac dyspnoea merits a somewhat fuller consideration in order to explain why breathlessness appears on exertion. This dyspnoea on exertion in cardiac failure differs in no way from that of a normal person, except that a lesser amount of exertion is required to bring it on.

No satisfactory explanation of why a normal person becomes breathless has been advanced as yet. The usual explanation that carbon dioxide and acid products from muscle metabolism accumulate in excess is erroneous, since chemical investigations have shown that

TABLE I

Subject	Experiment	Ventilation (Litres per minute)	Vital Capacity (Litres)	Ventilation Index
Normal	At rest	5	5	7
Normal	With exercise	18	5	25½ (+350%)
Cardiac Failure	At rest	7	4	12¼
Cardiac Failure	With exercise	14¾	4	25 (+100%)

Ventilation Index = Ventilation for 5 minutes of standardized exercise and for the subsequent 2 minutes divided by the Vital Capacity.

Ventilation Index at rest = Ventilation for 7 minutes at rest divided by the Vital Capacity (Harrison).

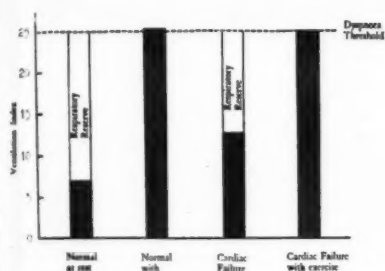


Fig. 1

the carbon dioxide content and the hydrogen ion concentration of the blood are lower during exercise than at rest, and hence some other factor must be operating, resulting in more than adequate compensation for the increased acid and carbon dioxide production. Furthermore, respirations are rapid and shallow in the breathlessness of exertion in contrast to the slow deep breathing of acidosis.

Whatever the cause of dyspnoea in normal people, it is likely that the same factors operate in the cardiac failure patient. Hence the problem is to explain why dyspnoea is more easily provoked.

Three factors are of importance here:

1) The vital capacity is reduced by pulmonary congestion. The rigidity of the lungs prevents its proper expansion and the engorged capillaries encroach on the intrapulmonary volume.

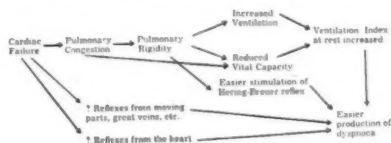
2) Respiration is increased when the patient is at rest, before he starts to exert himself. This increase of respiration is the result of reflex stimulation of respiration by the rigid lungs of pulmonary congestion.

3) Certain additional factors come into play as well. (a) Because the lung is rigid, the Hering-Breuer reflex is more easily stimulated when the patient is actually exercising and increasing his respiratory effort. (b) Reflexes from other parts of the body, especially the

moving parts, the great veins of the thorax and possibly the heart itself, also increase respiration.

These factors are interrelated and Harrison³ has expressed the relationship between them as the "ventilation index." This is the ventilation in a standard time divided by the vital capacity. Increasing the ventilation or decreasing the vital capacity will lead to a raising of the index. There is a threshold level of the index, above which all people are dyspnoeic.

It is obvious that the factors operating in cardiac failure raise the index before exercise even commences. There is encroachment on the respiratory reserve and less increase of ventilation is possible before the index exceeds the threshold. Furthermore, the index probably rises at a more rapid rate in cardiac failure than in normal people, be-



cause of these same factors. A simple hypothetical example to illustrate these points is given in table 1 and fig. 1, and the mechanism of cardiac dyspnoea is summarized in fig. 2.

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POSTWAR BREAKDOWNS

The greatest number of breakdowns will be observed among the men who come back after the war is over. One should imagine that heroes on land, on the sea and in the air who have gone through all the horrors of modern warfare, should be able to play with the demands of a peaceful life as easily as a Chinese juggler with his sticks. 1918 proved without doubt that it is easier to be heroic than to be courageous.—L. SICHER, M.D., in *Med. Woman's J.*, Mar. 1944

Rheumatic Fever*

By HUGH L. DWYER, M.D.,† Kansas City, Mo.

Cause: Rheumatic fever is associated with respiratory infections, possibly caused by group A hemolytic streptococci. Following pharyngitis of this type, there is a latent period of 2 or 3 weeks, followed by rheumatic manifestations.

Other factors: It is a disease of cities; hereditary tendencies, dampness, poor nutrition, cold weather, all tend to cause an increase in its rate of incidence. It is especially found in the states along the North Atlantic seaboard and in the Rocky Mountains.

Age: Most first attacks occur before 10 years of age, especially between the ages of 5 and 7 years.

Effects: Three out of five patients suffer permanent damage to the heart.

Diagnosis

History: Polyarthritides, carditis, fever, chorea or pallor in a youngster should make one suspicious of rheumatic fever. Anemia, nose bleeds, abdominal or chest pain and skin rashes (erythema marginatum) are also found in certain cases.

Signs: Persistent or intermittent slight fever, tachycardia out of proportion to the fever and systolic apical murmur. Don't make a final diagnosis of heart damage until all evidence is in (which may be a matter of months). Sedimentation rates are very accurate indicators of infection, and may be used as a guide as to the time when a patient may be allowed out of bed. The electrocardiogram, if properly interpreted, may be helpful.

"Growing Pains" in Legs and Arms

	Growing pains	Rheumatic pains
Time of day	Awake at night	Day pains Relieved at night
Relieved by	Use, heat, massage	Rest, heat
Increased by	Resting	Using leg
Type of pain	Diffuse	Localized (child points to location of pain)

The multiple swollen joints of children are not red; those of adults are reddened.

Rheumatic fever is a protracted disease. The diagnosis of rheumatic fever implies that all heart structures are probably involved. That the disease is serious is shown by these figures: One—

† Professor of Pediatrics, University of Kansas.

*Taken and abstracted by R.L.G. during the Chicago meeting, Oct. 26-29, 1943, of the Interstate Postgraduate Medical Assembly.

fourth of all patients with rheumatic fever die within 10 years, and one-third die within 20 years. The treatment of rheumatic fever involves a long, carefully controlled convalescence, as in tuberculosis treatment.

Rheumatic fever is a major health problem proportionate to syphilis and tuberculosis, inasmuch as one million persons have rheumatic heart diseases. Between the ages of 5 to 14 years, rheumatic fever is the leading cause of death, and between the ages of 5 and 20, it is second only to tuberculosis.

It is associated with respiratory infections, usually group A hemolytic streptococci.

After the pharyngitis, there is latent period of 2 to 3 weeks, following which rheumatic manifestations appear.

After puberty the number of first attacks markedly decreases.

Erythema marginatum annular (circular) is the typical rheumatic lesion. Subcutaneous nodules are pathognomonic of rheumatic fever. They are small (pin head to tapioca grain size), located over bony prominences, appear suddenly. When they are present, the mortality rate is twice as high.

The earlier the age of onset the greater the possibility of heart involvement.

Persistent leukocytosis indicates persistent rheumatic infection. The sedimentation rate fluctuates less than the white blood count and may be used to judge when a rheumatic infection is quiescent.

Treatment

1. Salicylates reduce fever and relieve pain, thus reducing work of the heart.
2. A tonsillectomy may help and may prevent recurrence. It should not be performed in the acute stage. Prepare the patient with sulfanilamide for a week before the operation, to prevent a flare-up of rheumatic infection.
3. Complete rest in bed, for many months if necessary, must be insisted upon to rest the heart. Persons with respiratory infections should be kept out of the patient's room.
4. The prophylactic daily, administration of 10 to 20 gr. of sulfanilamide for 6 winter months of each year often prevents rheumatic symptoms from appearing.
5. Digitalis is toxic; do not give it unless definite heart failure is present. If decompensation appears, use digitalis in full doses.

Limitations of Sulfonamide Therapy*

(A Symposium)

EVERY ADVANCE in treatment has been marked (1) by a wave of wide spread enthusiasm followed by (2) a reaction of discouragement, as the limitations of the new method are shown.

The sulfonamides are now entering the second phase. They are not "miracle" drugs and there are certain things that they will not do. They cannot take the place of good surgery, as will be shown by the facts in this report.

When Sulfonamides Are Effective

Sulfonamides are effective in generalized infections of certain types. (1) *Hemolytic streptococcus septicemia* is always cured by sulfanilamide. (2) *Pneumonia* rapidly responds to sulfathiazole and sulfadiazine in many cases; the complications of pneumonia are becoming much rarer as the disease process becomes shorter and less severe (3) *Menigitis and peritonitis* of streptococcal origin are much helped by sulfonamides, unless pus has formed. (4) *Staphylococcus generalized infections* may be prevented by the use of sulfathiazole, but the local inflammatory processes are not altered by such treatment.

"Surgical" Versus "Medical" Infections

Surgical infections are localizing, tissue destroying infections, which often result in pus formation, and which heal by granulation tissue and scar formation. Medical infections are, when the patient survives, followed by complete resolution to normal, such as is true in pneumonia.

In considering the value of any medical treatment used in combination with surgery, the type and time of surgical procedure, the associated conditions, postoperative care, all play such a part that it is often impossible to tell whether a drug or the surgical procedure cured the patient—this is also true of penicillin.

Sulfonamide "Masking"

When a local focus of infection is formed, the continued administration of sulfonamide may result in a masking of the usual symptoms typical of that focus (mastoid, localized abscess). When the drug is stopped, there results a general spread of infection, as the focus has been held in abeyance.

Surgery is needed to treat a focus.

War Casualties and the Sulfonamides

There are four uses of the sulfonamides in war casualties: 1. Infectious

diseases, 2. Venereal diseases, 3. Tropical diseases, 4. Surgical wounds and burns.

Sulfonamides in Wounds

A controlled, bacteriologic and clinical study of wounds, compound fractures and burns has been carried out by the subcommittee on wounds of the National Research Council. 1,700 cases have been reported and analyzed up to Oct. 1, 1943. All factors have been considered in all cases and recorded, so that it is possible to compare identical series of each type of injury with a similar series treated in a different manner.

Soft tissue wounds: The control groups, which did not receive sulfonamide therapy, had the lowest rate of infection. Evidently, sulfonamides will not compensate for either actively infected wounds or for poor surgical treatment of wounds.

Shock, dirt and contamination of wounds, tissue destruction and prolonged washing of wounds are factors that result in an increased incidence of infection in wounds. The earlier the surgical care of wounds, the less the number of infections.

The wounds that were left open became infected much less frequently than those that were sutured completely. Those partially sutured had the highest rate of infection. (Evidently a compromise measure in wounds that should have been left open.—Ed.) Too tight suturing leads to tissue death and infection.

It was puzzling to determine why prolonged washing should apparently cause an increase of wound infection. It may be that foreign bodies which are covered with bacteria should be removed before the wound is washed so as to avoid dissemination of bacteria into all parts of the wound. (No definition of "prolonged" washing was given. This may be another example of misleading figures—the badly contaminated wounds, which will have a higher incidence of infection, are naturally washed longer.—Ed.)

Debridement: The complete removal of contaminated and crushed tissue was followed by a much lower rate of wound infection than wounds that were treated by partial excision.

Tendon repair often resulted in a worse infection.

Soft Tissue Wound Summary

The local and general use of sulfonamides did not eliminate hemolytic strep-

*Presented before the Buffalo Academy of Medicine, Buffalo, N. Y., on Nov. 10, 1943. Notes by R.L.G.

tococcus, staphylococcus aureus, pathogenic aerobic gram negative bacilli or aerobic Clostridium Welchii (gas gangrene) infections. The control (non-sulfa treated) group eliminated most of such infections.

Compound Fractures

In general, the results of a series of compound fractures was identical with the conclusion expressed above, except that such fractures are more liable to be followed by a serious infection as there is maximum contamination and tissue destruction.

Compound fractures that are closed completely had fewer infections. This is possibly due to the fact that exposed bone is liable to contamination, and granulation tissue is slow to grow over bone. Plating of compound fractures is followed by infection in 25 percent of cases.

Compound Fracture Summary

Again, it was found that there was a lower rate of infections in wounds that had not received sulfonamides.

Plaster casts resulted in fewer infections than closure or plating.

When organisms are found in closed wounds, we believe that they were introduced at the time of original injury or during its treatment, rather than appearing as secondary contamination.

Burns

The factor of damaged tissue is important in burns. These wounds are extensive but lack depth. Many aerobic bacilli are found but they do not cause infection in superficial wounds, seeming to prefer muscle.

There is a very high incidence of infection in burns. Such infections are usually mild. Shock is very important as an accompaniment of burns.

The results of various types of treatment follow those outlined above, inasmuch as contamination results in an increased incidence of infections, as does tissue damage and too prolonged washing. If plasma can come out of a burn, it seems logical that bacteria can go in.

Methods of specific treatment: 1. Tannic acid (McClure), 2. Vaseline and pressure (Koch), 3. Sulfonamide spray (Pickerell)

Results of Burn Treatment

We feel that the compression method of Koch is best. Pressure prevents the loss of blood plasma and the closed dressings protects the extensive wound from secondary contamination. The tannic acid method was followed by infection in almost every case.

Second and third degree burns are

more liable to be followed by infection. Vaseline and saline compresses are followed by infection in 50 percent of cases; tannic acid in 96 percent of cases; sulfanilamide powder in 90 percent; sulfanilamide film in 50 percent and sulfadiazine spray in 60 percent; and Zinc peroxide in carbawax 50 percent.

Summary of Burns

The sulfonamides are disappointing in that there is no decreased incidence of infection by general or local application of sulfadiazine or sulfathiazole and sulfadiazine locally. There does seem to be a low incidence of death and septicemia. Generalized spread of infection is apparently prevented by sulfa therapy

Possible Causes of Sulfa Failure

The ineffectiveness of sulfa drugs to change a local lesion is probably due to something in the local field, such as damaged tissue and other inhibitors, which prevents the bacteriostatic action of sulfonamide.

We are now going to run a series using micro-crystals of sulfathiazole, as this preparation may be the most effective. Carbawax is a good medium for sulfonamides. These studies do not relate to the use of sulfonamide in the peritoneal cavity.

All war wounds are infected to some degree despite the use of sulfonamides. The English surgeons are going back to the use of the dyes, such as acriflavine and other flavines.

Penicillin

Penicillin is being tried here and in England. Walter Keefer has reported some 500 cases of various infections, mostly gonococcal, treated with penicillin in which many good results were obtained. Very few of these were surgical infections.

Our short series of penicillin cases showed dramatic cure in 30 percent of cases treated by penicillin intravenously. Local treatment resulted in dramatic cures in 25 percent. The great majority of septicemias were cured. Good results

Penicillin Results	
Staphylococci resistant to sulfonamides	Often cures
Staphylococcus aureus infection	Good results in majority
Hemolytic streptococcus infection	Good results in majority
Staph. and Strep. mixed infection	50 percent good results
Other mixed infections	35 percent good results
Gram negative bacilli	Often inactivate penicillin and staphylococci can grow

were secured in compound fractures and chronic osteomyelitis.

Dosage

Generalized use: Poor results are obtained if less than 250,000 units are used. We now use doses varying from 250,000 to 1 million and over.

Local use: 10,000 to 50,000 units give fairly good results.

Discussion

Dr. Nelson G. Russell: In my experience, sulfanilamide has been very effective against *erysipelas* (almost a specific), hemolytic streptococcus infections and meningitis and little else. I just learned today what experience really is. When a man has made the same mistake every day for 40 years, he is considered experienced. (Internist)

Dr. Herbert A. Smith: It seems to me that the sulfonamides have had a definite effect on mortality rates. I feel that the sulfonamides should be used only occasionally in wounds, so that the patient won't be sensitized if the drugs are needed for generalized use later. (Surgeon)

Dr. Ernest Witefsky: Before dismissing the sulfonamides, one should learn the degree of contamination, as well as the type of organism. It is not enough to say that a staphylococcus is present, one should know how many organisms are present in each cc. to really analyze the effects of chemotherapy. We have one patient who has one or two staphylococci in each cc. of blood on culture, whenever we have examined it for the

last several years, due to chronic osteomyelitis. This patient might be considered a case of staphylococcus septicemia.

In local wounds, para-aminobenzoic acid and other inhibitors may counteract sulfonamide action. Procaine is supposed to have such an inhibiting action.

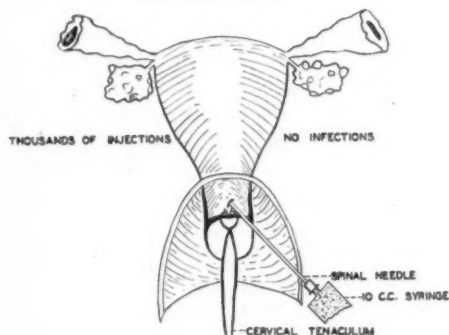
Prolonged washing of wounds may be harmful because it washes away human plasma, which is bactericidal.

In treatment of burns, one first treats the shock and in so doing, often administers large quantities of serum or plasma (2,000 to 4,000 cc.), which may contain little or no antibodies to counteract infection. It might be well if we gave some whole fresh blood or plasma to furnish bactericidal substance.

Penicillin is very soluble in water, as contrasted to the sulfonamides, so a strong concentration can be given readily. One Oxford Unit is the amount of penicillin that when dissolved in 50 cc. of broth inhibits the growth of a test strain of staphylococcus aureus. (Bacteriologist)

Dr. Meleney: In answer to these questions, (1) the mortality rate has decreased in all three groups (burns, compound fractures, soft tissue wounds) since use of sulfonamides; (2) sulfonamides do prevent the spread of infection elsewhere but have no effect on the local infection; (3) a quantitative study to determine the number of bacteria in each wound was begun but proved impossible to carry out in any large series.

CERVICAL INJECTION OF ESTROGENS DIETHYLSTILBESTROL



10 CC. CAN BE INJECTED WITH EASE - 25 CC. HAVE BEEN INJECTED

CERVICAL INJECTIONS

Further information on cervical injections of diethylstilbestrol in uterine bleeding and endocrine gynecology, may be found in Karl J. Karnaky's articles in *CLINICAL MEDICINE*, July and November, 1943, issues.

Urinalysis: What the Physician May Learn

By JULIUS S. WEINGART, M.D.,* Des Moines, Iowa

Red versus white cells in the urine

IT is not very difficult to distinguish between red blood cells and white blood cells in the urinary sediment since the former are clear, slightly yellow disks and the latter appear more granular. If there is any doubt, a drop of strong acetic acid may be added to the specimen to be observed. Then the red cells will disappear and the nuclei of the leucocytes will be visible.

For this the high dry lens should be used and a cover slip placed over the specimen.

Significance of pus cells in the urine

It should be remembered that if there is pus to a pathologic degree — or perhaps one should better put it, leucocytes in pathologic numbers — there will always be clumps of them. I have seen grave errors arise from assuming that a considerable number of unclumped leucocytes indicate kidney or bladder infection, for this may occur in many other conditions, such as appendicitis, salpingitis, etc.

Only when there is pus, as evidenced by a great number of clumped leucocytes, is it safe to infer that there is inflammation of some part of the urinary tract.

The Recognition of Blood in the Urine

A good procedure, if one is looking for urinary bleeding, as in the diagnosis of renal stone, is to centrifuge the urine and then look at the sediment at the bottom of the tube with a hand lens or with the ocular of the microscope. A small red clump thus visible carries more conviction as to actual bleeding. In addition to confirmation under the microscope a guaiac or benzidine test can be done on this.

Recognizing Urinary Tract Infections

In any case the gross inspection of the urine should not be neglected. It would seem hardly necessary to point out that the person who is responsible for the diagnosis should be just as anxious to see the urine in a case under his care as to count his pulse or listen to his heart. Yet, far too often, the practitioner, confronted with a difficult problem in differential diagnosis, reads only the report of the technician and lets it go at that. He should wish to know and see

whether there is an actual pus sediment, whether there is gross bleeding or not, etc. etc.

Frank bacilluria also is best appreciated by inspection of the fresh urine. Pus may not always be present. I have seen this condition unrecognized and neglected because the laboratory report stated merely that no pus or casts were found. If the urine is cloudy and if there are no crystalline or amorphous precipitates to account for this, and if innumerable bacteria are found, there is undoubtedly a bacilluria. Of course, in adult females the specimen should be catheterized, and in little girls the absence of a vaginal discharge should be proved.

If there is actual pus in the urine, a culture of this will generally reveal the offending organism. However, cultures of old or contaminated urine are of no value and the finding of a few colonies, even of a pathogen, from a clear urine should not be considered evidence of infection.

If no pus is found, bacterial stains and cultures will be of no value. However, let no one think that normal urine is proof positive of the absence of infection in the urinary tract. It very often happens that the ureter is plugged and pus does not escape from the pelvis until after an innocent appendix has been removed. Or, an abscess deep in the kidney cortex is walled off from the collecting tubules and no sign of the infection is gained from the urinalysis.

Remember, also, that renal stones do not always cause bleeding, or, when they do, this may be intermittent. Kidney tumors do not cause bleeding until, and unless they invade the pelvis.

Significance of Hematuria

It is reprehensible to minimize the significance of urinary bleeding. Every physician has seen renal tuberculosis, hypernephroma, and bladder carcinoma, allowed to advance to the incurable stage because the significance of this important symptom was neglected. It is a safe rule to give no patient, who has had even only one attack of hematuria, a clean bill of health until his case has been thoroughly investigated.

We should not give up this examination in any case. It may often give negative results but sometimes it is the all-important clue to the solution of a mystery.

*Pathologist, Iowa Lutheran Hospital, Des Moines, Iowa.

Some Points on the Applied Anatomy of a Tonsillectomy

By T. T. JOB, Ph.D.,* Chicago, Illinois

TONSILLECTOMIES usually head the list in numbers of surgical operations in a hospital. The patients are largely between 6 and 14 years of age. Before 5 years of age it is difficult to obtain complete excision, which is necessary to prevent regeneration, because of the very active proliferation of lymphoid tissue at this age in all lymphoid regions of the body; after age 25, tonsillar involvement is not common, unless there has been a chronic or earlier involvement, because of the degree of atrophy in these structures in early adulthood. That is, the lymphoid tissue in the body increases rather rapidly up to about 10 years of life, when the thymus normally begins involution (prepuberty period) followed by atrophy of the tonsils and adenoids in late adolescence, if they have not been pathologically involved earlier. During adolescence, the appendix (abdominal tonsil) reaches its peak of pathological involvement. Following these cyclical flares the lymphoid structures more or less gradually undergo almost complete involution by the time the variable period of "old age" is reached.

It is questionable whether a tonsillectomy should ever be considered a minor operation.

The Tonsillar Fossa

The tonsillar fossa or recess is formed by those muscles, and their fasciae, which produce the movements of a complicated functional unit—the base of the tongue, the soft palate and the pharyngeal walls. Injury to these muscles in a tonsillectomy affects swallowing, respiration, phonation and the pathway of vomitus. Thus, such an injury may seriously modify the personality and the effectiveness of an individual.

In general, the anterior wall of the tonsillar fossa (anterior pillar) is formed by the glossopalatinus muscle, the posterior wall (posterior pillar) by the pharyngopalatinus muscle, the lateral or deep wall by the superior pharyngeal constrictor and the styloglossus muscles. Lying just underneath the relatively thick mucous membrane which covers the soft palate and fauces is the deep fascia which ensheathes the glossopala-

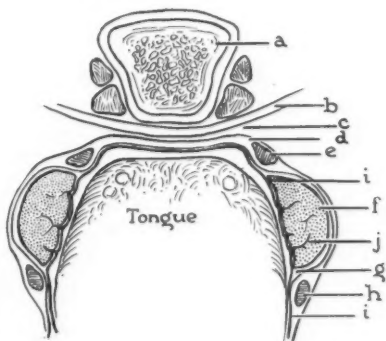


Fig. 1. Cross-section through the tonsillar level showing general relationships of tonsils. (From laboratory specimen.)

a. Body of the second cervical vertebrae. b. Prevertebral fascia. c. Retropharyngeal space. d. Superior pharyngeal constrictor muscle and its fascia (buccopharyngeal fascia). The fascia encloses e.—the stylopharyngeus muscle (posterior pillar), forms the wall of the tonsillar fossa and again encloses h.—the glossopalatinus muscle (anterior pillar). f. The tonsil. g. Pertonsillar "space," or cleavage plane; actually areolar connective tissue. i. Tonsillar crypt, an invagination of oral epithelium (i).

tinus, dips laterally to the constrictor muscle and then turns back medially to ensheath the pharyngopalatinus muscle. This fascial pocket (fossa) ends superiorly in an acute angle at the soft palate in the supratonsillar recess or fossa; inferiorly, it passes below the upper level of the base of the tongue to the level of the styloglossus muscle. Thus the tonsil is surrounded by muscles and fascia except on the exposed faucial surface where only the oral epithelium is found. The invaginations of this epithelium into the tonsillar substance forms the tonsillar crypts. This is possible because there is no deep fascia over this surface of the tonsil.

The tonsil itself has a fibrous framework (stroma) which forms on the surface of the tonsil a fibrous "tonsillar capsule" (anatomical capsule). This capsule is very thin or incomplete on the faucial surface so that lymphoid tissue sometimes infiltrates beyond the tonsillar fossa into the soft palate and the walls of the oral pharynx.

Between the deep fascial wall of the fossa and the tonsillar capsule is located

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normally a layer of loose areolar (peritonsillar) connective tissue which contains an extensive vascular plexus. This connective tissue layer forms the cleavage plane along which the surgeon separates the tonsil from the deep fascial wall of the fossa, and thus becomes one of the most important parts of the anatomy involved in a tonsillectomy, because the character of its structure,—whether loose areolar connective tissue or dense fibrotic tissue, determines whether a tonsil may be easily removed with some type of snare, or whether dissection, with its attendant hazard of either removing too much or too little tissue, will be necessary. That is, the structural character of this fascial plane is related to the history of the case.

If the tonsil has been only slightly involved previous to the operation, then the loose areolar connective tissue retains its normal structure, and the tonsil will be mobile so it may be forced into a snare; the arterioles of the vascular plexus which are in this loose fascia can contract and retract so as to control the hemorrhage. However, if there have been several previous slight attacks of tonsillitis or a few severe attacks, then this loose fascia becomes so fibrotic that the cleavage plane is obliterated and the tonsil is firmly attached to the deep fascial wall of the fossa. This limits the mobility of the tonsil to such an extent that a dissection is required. If a snare is used there is the real danger, either of pulling the deep fascial wall and some of the muscular wall of the fossa into the snare and cutting sizeable arteries which results in severe hemorrhage, or of cutting through the tonsil itself and thus leave behind a considerable portion of the tonsil.

If a dissection is performed, since the cleavage plane is obliterated by the dense fibrous formation, it must be a sharp dissection and is thus fraught with the same dangers as indicated in the use of the snare, but such dangers can be obviated with care. In any event, even though the clotting time is satisfactory, these fibrotic cases are the ones which give most trouble with hemorrhage. This is due to the fact that, either sizeable arteries are cut, or the arterioles are so embedded in dense connective tissue that they cannot contract or retract so as to control the hemorrhage. A severe hemorrhage some hours or days following the operation usually means that there was an operative injury to a sizeable artery.

In view of the above, it is apparent that children are not so liable to have a fibrotic condition of the peritonsillar

connective tissue and consequently there would be fewer serious hazards in tonsillectomies, but young adults, who give a history of chronic tonsillitis, are subject to serious possibilities in such an operation.

The inferior pole of the tonsil is well below the level of the dorsal surface of the base of the tongue. An enlarged tonsil may extend as far as the tip of the greater cornu of the hyoid bone. It is this inferior pole of the tonsil that is sometimes left behind in a tonsillectomy. In children, this is all that is necessary for regeneration of a tonsil. Further, it is at the inferior pole that the tonsillar branch of the dorsal lingual and the ascending pharyngeal arteries are injured. Frequently, they are the largest source of blood to the tonsil.

Blood Supply

It should be remembered that the tonsil has several sources of blood supply, all of which typically arise directly or indirectly from the external carotid artery: the ascending pharyngeal, the dorsal lingual from the lingual artery, the ascending palatine from the external maxillary or facial and the descending

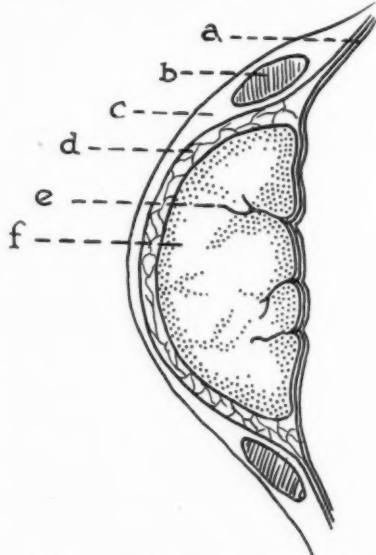


Fig. 2. Enlarged cross-section of right tonsil.

a. Oral epithelium. b. Stylopharyngeus muscle (posterior pillar). c. Buccopharyngeal fascia and superior pharyngeal constrictor muscle. d. Peritonsillar "space" or areolar connective tissue. e. Tonsillar crypt (continuous with oral epithelium). f. Tonsil.

palatine from the internal maxillary. All of these form a plexus about the tonsil, lying in the loose peritonsillar fascia. The veins drain through the pharyngeal plexus and lingual vein into the internal jugular vein; a relatively short course to a very large vein. The lymphatics drain so constantly and extensively through a deep cervical lymph-node located just superiorly to the tip of the greater cornu of the hyoid bone and behind the angle of the mandible, that it is called the "tonsillar lymph-node." Variations in the arterial supply are common. The internal carotid and sizeable aberrant arteries may be closely related to the fascial capsule. While such are not common, their presence should always be suspected. The relationship of the IXth cranial nerve at the inferior pole of the tonsil is such as to make it subject to injury if the deep fascia of the fossa is pierced.

The relationships just considered emphasize the importance of the deep, fascial wall of the tonsillar fossa as a landmark in tonsillectomies. *If the surgeon keeps wholly within this fascia, muscles and important arteries and nerves are sure to be protected.* Any incision beyond this fascia is almost

sure to give unsatisfactory results.

The fact that this deep fascia does not extend over the faucial surface of the tonsil explains some important conditions. For example: a) when the tonsils are pathologically enlarged, they can protrude into the oral pharynx and thus relieve the pressure laterally on the internal carotid artery, internal jugular vein and vagus nerve, but in doing so they interfere with swallowing, respiration and phonation; b) as long as the fascial wall remains intact, tonsillar abscesses are confined to the tonsillar fossa, but may "head" toward the fauces, thus making it possible to inspire pus and cause lung abscesses, or, to swallow the pus and subsequently develop a colitis. This intact fascial wall is a definite factor in preventing the spread of minor postoperative infections.

When a peritonsillar abscess breaks through this deep fascial wall, it spreads in the cleavage plane just external to the buccopharyngeal fascia (fascia of the pharyngeal constrictor and the buccinator muscles). The spread may be down the neck or posterior between the buccopharyngeal and prevertebral fascia (retropharyngeal abscess).

706 S. Wolcott Ave.

The Diagnosis of Early Hyperthyroidism

By REGINALD FITZ, M.D.

Boston, Mass.

It is my belief that the earliest underlying symptoms and signs of hyperthyroidism are indefinable. As a general rule, what we call hyperthyroidism begins with notable insidiousness and is unrecognized until it has been in existence for many months. Probably a patient developing any form of hyperthyroidism is stimulated for a time, and at first feels unusually well so that *physicians have little clinical experience with its early manifestations.*

Only after it exists for some time, so as to wear the patient down, or unless the thyrotoxicosis is notably acute, does it make the patient feel ill enough to seek medical advice and by this time, usually, anyone can recognize it. This is a general rule.

As Sir William Osler brought out some fifty years ago, there may be occasional,

remarkable instances in which the symptoms of hyperthyroidism come on with great intensity following fright or something of that sort, and, of course, an intercurrent infection may bring to light a pre-existent hyperthyroidism that no one had suspected.

In general, I believe that you have to look for hyperthyroidism to recognize it in its early stages, and if you *think* you recognize it, you usually have to *wait to be sure of your diagnosis* before you can institute any form of therapy in any rational way.

319 Longwood Ave.

(Dr. Fitz, an internist with an inquiring type of mind, wrote the above in response to a reader's request for help in the early diagnosis of hyperthyroidism—Ed.)

Suggested Treatment of Poliomyelitis

(Preliminary Report)

By W. M. CROFTON, M.D., London, England

IN THIS SHORT NOTE the acute infection, its treatment, and the prophylaxis of contacts can only be dealt with.

That cases in their acute phases can be rapidly cured by active immunization with autogenous antigens is evidenced by the following two cases:—

Twenty-five years ago a three year old baby girl awoke with a cry in the night. In the morning, both legs were completely paralyzed. A white staphylococcus was isolated from her urine, an antigen made from it, and a short course of immunization given. In three weeks the little girl was running around perfectly normally.

This year (1943) a girl of seven became, suddenly, completely paralyzed in her left leg. A white staphylococcus was isolated; six doses of an antigen, made from it, given every second day completely restored her. She was able to walk normally in fourteen days. This case appeared miraculous to her medical attendant and the consultant orthopaedic surgeon.

I have always found this white staphylococcus in the urine of the acute phase in pure culture. To orthodox bacteriologists white staphylococci grown from the urine are always assumed to be urethral contaminations, a quite improper assumption. In other diseases I have proved by simple filtration experiments that these microbes can be grown from both the filtered and unfiltered halves of the same specimen. The fact is that it is in their virus forms, into which they pass in the blood and tissues that most microbial invaders are excreted by the kidneys from the blood circulating through them. Since they concentrate the infection in the urine, proper culture of it furnished us with an almost unfailingly accurate means of diagnosis and consequent specific therapy. It is because these microbes are in their virus phase that they cannot be seen in the diseased tissues.

In all the misnamed virus diseases the microbial phase can be turned into the virus phase at will by simple culture methods; for instance in the easy case of foot and mouth disease, the virus phase of which will go through the finest filters.

But how can any case be cured by adding more of the infection even if modified by killing it? It is constantly stated to be quite impossible. But the two cases quoted show this statement to be apparently false. It is quite easy to demonstrate that in the acute infections a few doses of antigen, as in the above cases, will produce the most satisfactory, dramatic and constant results and much easier to cure than chronic infections which constantly require the achievement of a very high degree of immunity which can only be attained by carefully raising the doses over many months.

The fact is that as long as the endothelial cells are intact there will be intact tissues to be stimulated to produce antibodies, and the intact endothelial cells will pass the dead microbes through to allow this stimulation to take place.

Making The Vaccine

Take a catheter or midstream specimen of urine into a sterile vessel; incubate it over night; plate it out on agar containing 10% of fresh defibrinated oxalated or citrated human blood, added when the agar medium is cooled down to just over 50°C. There will be sufficient growth in 8 or 12 hours to make a suspension. Half-an-hour at 55°C will kill it, or three hours, in 2% formol Saline. Doses, $\frac{1}{4}$ million, $\frac{1}{2}$ million, 1 million $1\frac{1}{2}$ million, and 2 million, given subcutaneously every second or third day. If reaction follows, it will usually cure cases. The antigen must be rushed through as quickly as possible for the longer the delay the more disability will be left. Doses of 1 million, 5 million, and ten million given in two day intervals will usually serve for the prophylaxis of contacts.

Remarkable results of restoration have been achieved in extreme cases of wasted muscles by immunization followed by patient massage even four or five years after the primary attack when recovery seemed hopeless.

22, Park Square East, Regents Park, N. W. 1

[Suggested treatments are always welcome in the field; however we feel much work, in vaccine therapy, is still necessary. Ed.]

New Coagulum-Contact Method of Skin Grafting

By MACHTELD E. SANO, M.D.,* Philadelphia, Pa.

Heparin Solution

THE heparin is diluted under sterile conditions with Tyrode's formula (see below) so that 1 cc. of heparin solution contains the equivalent amount of heparin which prevents the coagulation of 5 cc. of cat's blood for 24 hours.

Method

In a 10 cc. syringe containing 1 cc. of heparin solution (see above) 5 cc. of the patient's blood are drawn under sterile conditions. The blood is centrifuged and the plasma removed to a sterile tube and kept on ice. The buffy coat (leucocytes) which float on top of the red cells are removed with a platinum loop and placed into a sterile test tube containing 2.5 cc. of Tyrode's solution and three sterile glass beads. This mixture is shaken vigorously. We shall refer to this fluid as extract. The recipient area is washed with warm sterile saline and dried with sterile gauze. The donor area is sterilized by whatever method is customary for the operator. Thin split to full thickness grafts can be used; the size and the shape of the graft conforming to that of the recipient area. The graft is inverted on a piece of sterile gauze without rinsing in saline which tends to remove the coagulating juice factor. With a camel's hair brush the underside of the graft is moistened lightly with the cell extract. With another brush the plasma is painted on the recipient area. The graft is quickly fitted into the recipient area. The edges are carefully adjusted and slight pressure with the forceps applied to the graft to assure good contact.

The graft adheres firmly within a few minutes. Single strips of boric acid oint-

ment gauze may be lightly placed over the graft. No other dressing is applied; no stitches are needed. Within 48 hours the skin becomes a deep purple in color and then gradually, day by day, fades to a normal pink. The graft is warm as soon as the purplish hue is noted, in fact it is slightly warmer than the normal surrounding skin.

In poorly vascularized areas the skin becomes pale pink in color instead of deep purple. The grafted area must be protected from trauma for the first few days. If the Padgett Dermatome is used the forceps must be wetted in saline to prevent them from adhering to the graft. If the graft is very thick and tends to retract wait two to three minutes before adjusting the edges. By this time the glue will begin to set and the graft can be easily held in place by exerting slight pressure with a wet piece of gauze for about two minutes.

Tyrode's Solution

Sodium Chloride	8.0 gm.
Potassium Chloride	0.2 gm.
Calcium Chloride	0.2 gm.
Magnesium Chloride	0.1 gm.
Sodium Acid Phosphate	0.05 gm.
Sodium Bicarbonate	1.0 gm.
Glucose	1.0 gm.
Distilled Water added to make	1000 cc.
Filter through Berkefeld filter "W"	

[The Sano method of causing skin grafts to adhere avoids the necessity of using sutures and permits quick growth of blood vessels into the graft, both factors tending to increase the percentage of skin that will "live." There would seem to be no reason why this method could not be applied to healing of surgical wounds and lacerations.—Ed.]

* Temple University School of Medicine and Hospital.

COMING ARTICLES

AAF MEDICAL SERVICES	Major General Grant, The Air Surgeon
LATENT PHLEBITIS and RHEUMATISM	Otto Meyer
SUBLINGUAL ADMINISTRATION OF DRUGS	R. P. Walton
ENDOCRINE PROBLEMS OF CHILDREN	E. P. McCullagh



EDWARD JENNER

Editorial

Edward Jenner

IF, IN THE middle of the eighteenth century, an angel had hovered over the earth, proclaiming in stentorian tones that humanity was to be relieved of the burden of one disease and asking which scourge was to be removed, a great cry would have gone up from all parts of our globe, "Save us from smallpox," for this pestilence stalked abroad from the equator to the arctic circle, sparing no one, from the swineherd in his hut or the red Indian in his tepee to the Monarch in his palace. And of those that it did not kill, many were crippled or disfigured for life. In the eighteenth century alone, smallpox killed 60,000,000 men, women and children.

The fact had been repeatedly noted that cattle were subject to a disease resembling smallpox, and that dairy maids, who had acquired this infection accidentally, were thereafter immune to its more hideous relative; but these observations were generally classed among the superstitions of ignorant rustics.

On May 17, 1749, the family of the Rev. Stephen Jenner, an English clergyman, in Berkley, Gloucestershire, was enlarged by the birth of a son, who was named Edward, and who, as he grew in stature, developed an immense interest in the birds, butterflies, beasts, and even the stones which he found among his native hills and copses. So clear was this predilection that, as he came to maturity, it appeared that, in order to provide exercise for his peculiar talents, he must become a physician, in spite of the fact that most of his male relatives were of the clergy.

So, at twenty-one, Edward was packed off to London, to study with that remarkable man, John Hunter. A more happy choice of a teacher could scarcely have been made, for the two were, in many respects, kindred spirits, and the precepts and example of Hunter had a profound influence on Jenner's life.

Jenner had often heard, among the farmers of his native county and in

other places, the folk-tale to the effect that the "cowpox" protected people against smallpox, and had pondered the matter. When he communicated his thoughts to Hunter, he received this characteristic reply, "Don't think; *know*; investigate; be patient; be accurate." And Jenner followed this advice to the letter!

The great plan to free the world from the curse of smallpox ripened slowly, but by 1796, when he was forty-seven years old, Jenner was so thoroughly convinced that cowpox was a true prophylactic that, on May 14th of that year, he took pus from a cowpox sore on the hand of a milkmaid, Sarah Nelmes, and inoculated an eight year old boy, James Phipps. *This was the first vaccination.* On the first of the following July, he introduced pus from a virulent case of smallpox into the boy's arm, and the lad was none the worse. *The thing was proved!*

But true to his teaching, Jenner did not rush into print with this one instance, but continued his experiments for two years, by which time he had accumulated twenty-three completely studied cases which, in 1798, he embodied in his thin little book, "An Inquiry into the Causes and Effects of the Variolae Vaccinae," which was followed between that time and 1806, by five other pamphlets describing experiments and improvements in technic and recommending ivory points as the best vectors in inoculation.

The publication of Jenner's book of course raised a stir and much professional opposition (as always happens to innovators), but the disease he was fighting was so universal and so terrible, and his thesis had been made, by painstaking observation and accurate recording, so nearly water-tight, that his critics were soon smothered by the glad acclaim of the entire world, and the worthy doctor was swept to the crest of a wave of fame and popularity scarcely equaled in medical history.

But all this celebrity and adulation did

not turn the head of this simple, kindly handsome, blond, fiddle-playing, verse writing British doctor. In spite of flattering offers from many sources, he continued his general practice among the country people of his native village, of which he was once mayor, where he was beloved by all for his unflinching human sympathy and helpfulness. Here, though sorely stricken by the loss of his wife, he continued his labors and his studies until, on January 25, 1823, he succumbed to a stroke of apoplexy. His honored bones rest in his native valleys, but a monument to him was erected in Trafalgar Square, London, and his statues dignify many public places.

It is difficult for us, in this day, when smallpox is so rare that many physicians have never seen even one case, to estimate the magnitude of the contribution which Jenner made to human welfare and the progress of civilization, when he, by patient, accurate and long-continued labor, transformed a rural superstition into a permanent working principle of science. Suffice it to say that the honors and gratitude which came to him in his day were far from being excessive.

Education is steadily following an uphill road.—Dr. CLIFFORD D. SWEET.

A Possible Cure of Rheumatic Fever

THE most stimulating article in a long time discusses the use of very large, regulated doses of salicylates in the treatment and possible cure of rheumatic fever.

Alvin Coburn of Johns Hopkins (*Bulletin of Johns Hopkins Hospital*, Dec., 1943) shows that if high blood levels of salicylate are maintained, the sedimentation rates of patients continued to fall progressively to normal as long as the blood level was maintained, and all became normal within 14 days or less. As the sedimentation rate is the most sensitive index of infection, it would seem that one might consider the patient "cured."

His case histories show that by giving adequate doses, such as 10 gm. (150 grains daily) to youngsters of 18, an attack of rheumatic fever can be stopped,

all clinical and electrocardiographic signs of heart damage may disappear, pains and fever stop and the patient become clinically much improved.

"The results of 2 years' experience with this technic show that none of 38 rheumatic patients treated with 10 grams of sodium salicylate daily developed valvular heart disease and that 21 out of 63 similar cases who received only small doses of sodium salicylate developed physical signs of heart disease."

As a caution, he adds that a high level (350 gamma per cc. of blood plasma) may be required to suppress the rheumatic reaction and that levels below 200 gamma may relieve the symptoms while permitting the progressive inflammatory process to involve the heart.

The author is now on service with the Navy. He has been written to, asking how this procedure may be carried out under ordinary home and hospital conditions. Until such information is available, it might be well to give definitely rheumatic fever patients 10 grams of salicylate daily until the sedimentation rate has been normal for a number of weeks (not permitting them out of bed) or until symptoms of salicylism appear (tinnitus, dermatitis, mental confusion).

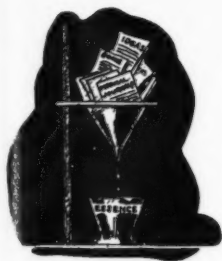
When symptoms of rheumatic fever are severe, the effect may be obtained in 4 hours by intravenous injection of 20 Gm. of sodium salicylate. The oral administration of salicylates does not produce the high blood level required until 48 hours have passed.

The sedimentation rate can be performed by any hospital laboratory or by the physician himself with no trouble other than the purchase of a few sedimentation tubes and drawing some venous blood from the patient for the test.

As Robert Louis Stevenson remarked, after a lifetime of achievement gained in spite of daily suffering with tuberculosis, a man has good health if he can do without it uncomplainingly.—WALTER ALVAREZ.

Science and Art

Medicine is both a science and an art: Science in its methods and inquiries; Art in its practice.—LORD MOYNIHAN.



CLINICAL NOTES and ABSTRACTS

Microfilm copies of any of the published papers here abstracted, up to 25 pages, may be obtained for 25 cents from Microfilm Service, Army Medical Library, Washington, D.C.

Modern Methods of Control for Measles, Scarlet Fever, and Diphtheria

Measles

Of all the diseases known to mankind there is none more likely to occur in a lifetime than measles. This very fact is evidence of our inability to control the infection. Age only is a restraining factor for we know that measles seldom occurs during the first three months of life, but advancing years exert no check on susceptibility. Grandparents and grandchildren may share alike in respect to this disease.

Epidemics of measles come with increase in population. When the supply of susceptibles has been exhausted, there must be a pause until more children are born and others have advanced to the age of distinction when they may have measles.

Because adults are not immune to measles unless they have experienced an attack, this infection is often of major importance in time of war. Among American troops from 1917 to 1919 there were 98,000 cases of measles. But it was not the office boys, not the city dwellers who suffered; it was the strong husky youths from the small towns and country districts who had the disease because they escaped exposure when children.

Measles is usually regarded as a virus disease, although some years ago Tunnicliff reported a green producing diplococcus as the causative factor. Virus diseases are usually more difficult to control than bacterial diseases because of the problems concerned in developing protective vaccines. Moreover, measles is a respiratory disease; it may not only be transmitted before the eruption but is more contagious in the catarrhal stage than at any other time, and it is one of the most contagious of all diseases. On the other hand, the contagion of measles is not tenacious and it is short-lived. So the chances of measles being con-

veyed to a susceptible is far greater before the eruption has appeared than afterward. Some believe that by the time the eruption is fully developed the danger of contagion has practically ended.

Immunization—There is no artificial method for establishing a permanent protection from measles. And until some means is developed for active immunization, satisfactory control of the disease cannot be accomplished. Rake and Shaffer have reported a new vaccine but little is yet known concerning its value. Temporary protection from measles is possible by the intramuscular injection of convalescent measles serum. Usually 7.5 c.c. of convalescent serum when given within three days of exposure will prevent the disease. The immunity, however, is not likely to endure for more than two or three weeks. Therefore, if a second exposure occurs two weeks or more after the administration of serum, a second injection will be required for further protection. Because human serum is used there should be no fear of reaction. If human convalescent serum is not available, whole blood from a parent who had a reliable history of having had measles may be substituted. But under the latter condition the quantity injected must be much greater, generally at least 30 c.c. being required.

Placental extract is also used for passive immunity and has the advantage of being easily available, as a rule. When the purpose is to prevent the disease, some advise that 2 c.c. of placental extract be injected intramuscularly at time of exposure and that 2 c.c. more be given one week later.

Modification — If any of the above measures just described is instituted more than three days after exposure, the susceptible person will probably develop

measles in an attenuated form. Sometimes this result is preferable to prevention because a modified attack of measles leads to a permanent immunity as a rule; whereas, absolute prevention is only a temporary state of immunity.

In an epidemic year or at any time that measles is known to be present in a community, children with colds no matter how slight should be excluded from school and kept at home. Children who have had measles and live on the premises when an active case of the disease exists are allowed to attend school for two reasons: (1) it is assumed that second attacks do not occur and (2) the infection is not carried by a contact for any considerable distance.

Placarding the premises is of no practical value in controlling the epidemic.

Scarlet Fever

Active immunization against scarlet fever by artificial means is the accomplishment desired. Whether this ideal can now be achieved must depend upon one's conception of this disease. There is no doubt that a positive Dick test can nearly always be changed to negative by injections of scarlet fever toxin according to the Dick method. Nevertheless, the Dick negative individual is not immune to infection by hemolytic streptococci from a scarlet fever patient. But should this occur no rash is likely to appear on the skin even though the throat presents the characteristics of scarlet fever. Moreover, fever and adenopathy may be accompanying symptoms. Under such circumstances, a diagnosis of scarlet fever is not likely. But if scarlet fever can occur without a rash, as is generally admitted, how are we to know that the condition is scarlet fever? Possibly injections of scarlet fever toxin immunize only against the toxemia of scarlet fever, including the rash. Even if we grant only that, the procedure seems advisable. Moreover, if the five regular subcutaneous doses are feared because of possible reactions, the toxin may be administered in three intracutaneous doses of 0.1 c.c. each. The amount to be injected may be determined as follows: 1st dose, 0.2 of third regular dose; 2nd, 0.15 of fourth regular dose; and 3rd, 0.1 of fifth regular dose—all given at weekly intervals.

For passive immunization, convalescent scarlet fever serum in 10 c.c. doses, injected intramuscularly, gives satisfactory results if used immediately after exposure. Its protective value is not likely to last for more than ten days to two weeks. Therefore, if there is a second or continuous contact with scarlet fever patient, it is well to repeat the

dose after ten days. Since a human serum is used, unpleasant reactions need not be feared.

Should the convalescent serum be administered several days after exposure, it is likely to modify the attack even if it does not prevent it. If convalescent scarlet fever serum is not available, whole blood—preferable from one who is a Dick negative—in quantities of 20 c.c. to 30 c.c. may be substituted. Or a prophylactic dose of scarlet fever antitoxin can be used instead.

For many years it has been my opinion that if tonsils and adenoids were removed before children entered school there would be far less scarlet fever. Such a procedure might not lessen susceptibility but it would undoubtedly reduce the opportunities for infection from carriers.

Diphtheria

Local circumstances may possibly influence slightly the time selected for active immunization. Usually nine months is a good age for the undertaking. It is just as well to omit the Schick test and assume that the child is susceptible. For the purpose of conferring immunity, we have had toxin-antitoxin, plain toxoid and alum precipitated toxoid. Now the first named is seldom used. Plain toxoid is best given in three doses of 1 c.c. each, three weeks apart. Sometimes 0.5 c.c. is given for the first dose. Injections are made subcutaneously. If alum precipitated toxoid is used instead of plain toxoid, at least two doses of 1 c.c. should be administered about a month apart.

In recent years, there has been an increasing tendency to immunize against more than one disease at the same time and with mixed antigens. This reduces the number of injections required. Ramon in France adopted this plan for diphtheria and tetanus. Combined diphtheria alum precipitated toxoid and tetanus alum precipitated toxoid are now obtainable. The dose is less than originally recommended. Each injection consists of 1 c.c. which is made up of equal parts of the two toxoids. Three doses are administered at from three to four week intervals. When these combined toxoids are administered there is a synergistic action; that is, the antibody response is greater to each toxoid when they are given together than to either one when injected separately. Moreover, unpleasant reactions are said to be no more common when using these combined toxoids than when diphtheria toxoid is given alone. This combined method of immunization is exceptionally valuable and should receive wider attention. If

adopted, it will often result in lessening anxiety and saving worry about the necessity for giving antitetanic serum. Should an injury occur where the possibility of tetanus must be considered, the administration of 1 c.c. of tetanus toxoid would probably result in approximately seven times as much protection as would be acquired by the injection of 1500 units of antitetanic horse serum, yet no horse serum sensitization would occur.

Still more recently a combination of diphtheria toxoid and pertussis vaccine has been recommended. Sauer advises this be given at seven months of age in three doses of 2 c.c., 2 c.c., and 3 c.c. at three week intervals. While no synergistic action is claimed for this mixed dose, the results are said to be as good as if immunizations for the two diseases were done separately. The advantage is in the smaller number of injections required.—A. L. Hoyne, M. D., in *Minnesota Medicine*, February, 1943.

Treatment of Ankle Sprain

A sprained ankle should be used continuously, if pain and disability are to be avoided. When the patient is sitting, he should be advised to keep the foot moving.

Procaine injection: All tender points on the ligaments are to be injected with 2 per cent procaine solution (after an x-ray shows that no fracture is present). The patient is instructed to walk; if any pain occurs, other tender points should be sought and injected until there is no pain on walking. An elastic bandage is applied snugly, and the patient told to carry out routine movements except for running and jumping. Pain rarely recurs after injection, no second injection is needed.—P. E. McMASTER, M.D. in *J.A.M.A.*, July 3, 1943.

Simple Method for Removal of Foreign Bodies

All surgeons have experienced difficulty in locating small foreign bodies deeply embedded in masses of muscle, even when aided by x-ray. The usual methods of location, by x-ray views in varying planes, by use of mathematical formulae to obtain depth, or by crossed wires placed externally, are often unsatisfactory. Operating in the dark room under fluoroscope has obvious disadvantages.

Beneath the table on which the patient is placed, the "head" of a regular issue field portable x-ray unit is held in a wooden frame. An old cassette cut down and mounted on a handled piece of plywood, makes a convenient fluorescing screen.

In actual practice the work is done at night, in order to facilitate accommodation of the eyes and to avoid the need for a large darkroom. This plan has been found superior to using a plywood "view box" fitted to the face and to small blanket "darkrooms" placed over the area examined. The area is first x-rayed to get a general idea of the location of the foreign body. This area is then prepared, infiltrated with procaine, draped, and the patient placed on the x-ray table. A spinal needle is then used to locate the foreign body under the screen, controlling the x-ray by foot switch.

In locating the object, no attempt should be made to move the needle laterally through the tissues. Location is accomplished by short "jabs" after the skin is passed. During this examination, the axis of the needle is kept as far away from a plane vertical to the table as possible; thus "misses" appear as large as possible. Usually, with practice, this probing requires about 30 seconds; then the object may be felt grating at

Type of Treatment	Relief of Pain	Results
Procaine injection into tender areas; steady use of ankle	No pain after injection; recurrence rare.	Very good; little disability unless a pulled muscle or arthritis
Procaine injection; ankle not used	Pain relieved at once	Some disability and pain after returning to use of foot
Taping; ankle not used	Moderate relief	Some disability and pain after using ankle
Taping; ankle used	Moderate relief	Much less pain and disability
Rest in bed, cold applications	Moderate relief	Pain and disability
Elastic bandage and use		
No treatment and use		Much lessened pain and disability

the end of the needle, or can be seen moving in the field with the slightest movement of the needle.

If possible, the needle is inserted through the original wound of entrance. Thus, the wound tract is opened up in exposing the fragment. As soon as the foreign body has been located by x-ray at the needle point, it has been found useful, by the author, to clamp the spinal needle at its emergence from the skin with a sterile hemostat, which is then taped to the skin. It is of course impossible for the needle to wander laterally through the tissues. Such clamping prevents the needle from being forced further in, or withdrawn, when the patient moves.

The patient is then carried to the operating room on a stretcher to minimize movement. The skin and needle are painted with antiseptic, redraped, procaine injected through the spinal needle, and the point of this needle exposed through a suitable incision. The foreign body is found at this point. The main difficulty encountered in the search for a foreign body is that this body is continually pushed aside in the blunt dissection used to locate it. With a needle in place, however, as described, its point is also pushed aside in the same muscle bundle in which the object searched for lies.

—J. K. PATTERSON, M.D., in *U. S. Naval Bul.*, July, 1943.

Tall, Thin Teen-Age Youths Have Highest Caries Rate

Tall, thin, teen-age youth suffers the highest rate of tooth decay of all groups of persons in America. This fact has been revealed by a two-year research study of more than 1,000 children just reported to the American Dental Association by Dr. Maury Massler, director of the Child Research Clinic of the University of Illinois College of Dentistry.

92% of all rampant caries, the most extreme form of tooth decay, occurred in the tall, thin boys and girls undergoing their most rapid spurt of growth. The rate of growth and the rate of caries was found to be in direct proportion.

"Of all teeth lost because of caries between the ages of 10 and 35," Dr. Massler declares, "87% were lost because of caries occurring during the teen-age."

Pointing out the need for better dental care to reduce the number of rejections for this cause by the armed forces, Dr. Massler reports that "The young adult selectees first brought up for service

in the Army and Navy showed strikingly the ravages of teen-age caries neglect. If these boys had had high school dentistry we would not have had 20% of our rejections on the basis of dental troubles."—in *Science News Letter*, Aug. 21, 1943.

The Art of Local Anesthesia

Safety, lowered toxicity and minimal shock follow the use of local anesthesia. As one's experience becomes greater, it will be found that *all types of operations* can be performed under infiltration anesthesia.

Errors: The patient is awake so that words and actions of the operating team must be watched. The patient must be made comfortable on the operating table and no pressure should be made by instruments or assistant's hands. Tissues must be handled gently, as only the area directly infiltrated will be anesthetized.

The operator must develop the "light hand." Smaller, more delicate instruments and needles should be used.

A pleasant voiced nurse or assistant to talk to the patient, music or radio, all help in distracting attention.

Many advantages: Deep breathing by the patient at the surgeon's request will lift a deep lying gallbladder neck into the operative field. Voluntary holding of the breath will permit securing of an area difficult to expose. A cough at command can identify the hernial sac close to the bladder. Dissection of many organs is facilitated by the line of demarcation developed by the procaine-saline solution.

Method

(1) Gain the patient's confidence by notifying him beforehand of any new or possibly painful move; do not have him so inebriated with sedatives that his reasoning power is lost; have a skilled individual to talk to, guide and distract him or use a radio; (2) Use dilute solutions inserted from one wheal; if necessary, raise secondary wheals subcutaneously from the first point; (3) Keep the needle moving during the injection to minimize possible intravenous injection; guide the needle with the index finger to keep it superficial and in the correct area; (4) Frequently aspirate to avoid injecting into a major vessel; (5) Review before operation the anatomy and especially the nerve supply of the operative area.—GERALD H. PRATT, M.D. in *Am. J. Surg.*, July, 1943.

(Using local anesthesia, it is possible to have patients walking around the next day after an uncomplicated appendectomy and routine to have them go home

the third day. By avoiding anesthetic shock and the fatigue brought on by laying in bed, one's patients avoid complications.—Ed.)

Tuberculosis and the X-Ray Film

While the chest x-ray is the best single method of determining whether a person has tuberculosis or not, a child-like faith must not be used. Early tuberculosis may be present and not be revealed because only 75 per cent of the lungs can be seen (those areas below the level of the diaphragm and behind bones and the heart are not seen).

Shadows cast by tuberculosis may be identical with those cast by other diseases (many persons have been admitted to sanitariums because of this fact). Tuberculous lesions elsewhere, as in kidneys or bones, are not visualized, and large numbers of tubercle bacilli may be eliminated through the urine or discharging sinuses. Many cases are on record in which the sputum contained tubercle bacilli and yet the chest x-ray was negative.—J. A. MYERS, M. D. in *Journal-Lancet*, July, 1943.

(As we have so often said before, the laboratory cannot make a diagnosis. There is no substitute for brain cells.—Ed.)

Gynecologic Problems of the Adolescent Girl

Morals came before scientific medicine, and the aura of virginity has prevented proper scientific study of the gynecologic problems of the adolescent girl. The average physical examination of the girl, and too often of the woman, does not include routine vaginal or rectal examinations.

Malformations (including imperforate hymen), infantilism, frigidity, painful intercourse, and vaginitis are not discovered or prevented. Cervicitis causes pains which are considered to be the result of appendicitis.

Fatigue, anemia and overweight in young girls are often due to hypothyroidism.—EDWARD ALLEN, M.D., in *Med. Clin. N. Am.*, June, 1943.

A Simple Face Mask

The following mask is suggested for use to control the transmitting of infectious diseases caused from sputum droplet dissemination from the source of infection.

Use an ordinary paper napkin, two small spring paper clips, or safety pins, and two rubber bands. Fold the napkin

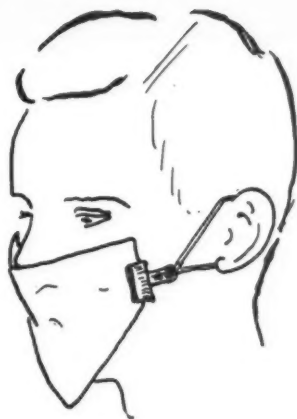


Fig. 1. Paper napkin face mask.

diagonally so that a triangular-shaped sheet is formed. The rubber bands are attached to the paper clips or safety pins, and attached to each corner of the folded napkin. Place the napkin over the nose and mouth of the patient.

The advantages of this type of mask (See Fig. 1) are its ease of preparation and application, its cheapness and availability, its effectiveness.

It is suggested that these masks be used on all patients on whom chest examinations are being done. Potent protection will be provided against the hazard of cross infection.

—D. ULMAR, M.D., in *Naval Med. B.*, July 1943.

Diarrheal Diseases in Children

In treating the patient with dysentery, the first essential is rest in bed to quiet the abnormally active peristalsis. When children become very active in bed or are allowed to get up too soon, relapses are likely to occur. Warmth applied to the abdomen also relaxes intestinal spasm and may be very comforting to the patient unless the external temperature is excessively high. For children with subnormal temperatures or cold extremities heat is indicated.

It is important to prevent excoriation of the buttocks in dysentery. Prompt and very gentle cleansing after defecation will help. Also the local application of one of a number of substances such as an oil, an ointment, milk of magnesia and the like, will keep the diarrheal stool which is acid and quite irritating

from making contact with the skin. Exposing inflamed buttocks to the warmth of an ordinary electric light will promote healing. A cradle equipped with electric light bulbs is very useful for this purpose. Locally an ointment containing 5% cocaine and 4% tannic acid is recommended for painful buttocks.

With the advent of fluid administration, the treatment of diarrhea becomes immediately more successful, but at the same time more difficult and complicated. Fluids by mouth should be given freely if tolerated. The most popular of these besides water are: mixtures of sugars, such as glucose or Karo with a buffer solution of electrolytes, (for example physiological saline, Ringer's, or Hartmann's solution) or a combination of sugar and saline with one-third orange juice. Weak tea, usually with added sugar, has had many advocates. The time-honored rule for the fluid requirement of a normal infant is: $2\frac{1}{2}\%$ ounces per pound of body weight per day. Additional fluid must be given to counteract abnormal fluid loss through diarrhea or vomiting.

Patients who have vomiting, distention, and severe diarrhea, and especially the extremely toxic infants already referred to, require parenteral fluids. Dehydration and acidosis are almost surely present in the more severe cases and the younger the child the more pronounced and serious are the consequences of loss of water and electrolytes. The classical signs of dehydration in the small infant are: inelastic skin, sunken eyeballs, depressed fontanel, and dry mucous membranes, (usually quite evident clinically).

Treatment

The dose of sulfaguanidine recommended by Marshall (who made studies of blood and stool concentrations after varying dosages) has usually been followed at least in a modified form. Marshall recommends an initial dose of 0.1 gram per kilogram, a maintenance dose of 0.05 gram per kilogram every four hours till the stools number four or less, then 0.1 gram per kilogram every eight hours for three days. $1\frac{1}{2}$ grains per pound of body weight is the dose of sulfathiazole usually given for the first two or three days, followed by a maintenance dose of one grain per pound usually for 2-4 days.

Sulfaguanidine is fairly soluble in water but poorly absorbed from the gastro-intestinal tract. Therefore it is possible to produce a high concentration, up to 200 mg. per cent in the in-

testine, but a relatively low concentration in the blood. It inhibits *in vitro* colon organisms. It is practically tasteless and is usually given to children in a suspension of water or milk. It cannot be given parenterally, but can be administered rectally.

In cases of persistent vomiting or coma, sulfathiazole may be given as the sodium salt in a 5% solution intravenously, or in 0.3-0.7% solution subcutaneously. Some cases of dysentery which fail to respond to sulfaguanidine will respond to sulfathiazole.—A. D. CHENOWETH, M.D. *Ky. Med. J.*, June, 1943.

Pectin for Shock

Pectin is an almost odorless powder with a mucilaginous taste. It dissolves in hot or cold water forming viscous opalescent colloidal solutions up to 5 per cent concentration. It is normally found in fruits and vegetables and especially in the peel of citrus fruits. A 0.75 per cent pectin solution has been used exclusively in the prevention and treatment of shock. It has been used as a replacement fluid when blood or plasma transfusions may have been indicated. 5 to 10 cc. are given each minute. Pectin furnishes a readily available source for colloidal solutions. The solutions are prepared by repeated filtration and heating for fifteen to eighteen hours. Pectin solutions tend to increase the systolic and diastolic blood pressure. Blood volume is increased and well maintained by pectin solutions administered intravenously.—F. W. HARTMAN, in *J.A.M.A.* Apr., 1943.

Simple Test for Blood in Urine

Small pieces of filter paper impregnated with orthotolidine are used for testing occult blood in the urine, with 1 drop of urine and 1 drop of glacial acetic acid-hydrogen peroxide mixture. The test is simpler and more sensitive than the microscopic or chemical examination. It detects as few red cells as 2 to 3 per cc., which is just above the upper limit of normal.

Technic: A number of filter papers are placed on clean glass, thoroughly moistened with a freshly prepared 0.5 percent solution of orthotolidine in 96 percent alcohol dropped from a pipette. The glass and filter papers are incubated at 40° C. for 5 to 10 minutes. When completely dry, they are cut into small pieces (17 mm. square). They should be stored in a closed container, in a dark place.

Equal volumes of glacial acetic acid

and 3 percent hydrogen peroxide (10 vols.) are mixed and allowed to stand 24 hours before using; this solution keeps for at least 7 months.

Procedure: Drop 1 drop of urine on a piece of orthotolidine paper on a clean white porcelain tile, and allow to spread so as to cover paper completely. Add 1 drop of acid-peroxide solution and observe reaction (see Fig. 1).

Number of red cells in urine per cc.	Reaction
0-1	Negative
1	Very faint, doubtful
3	Slight, definite positive (lasts 1 minute)
5	Slight, definite
10	Strong
50 and more	Strong

—H. Zwarenstein, D.Sc., F.R.S., in *Clin. Proceed.* (Capetw on Post-Grad. Med. Assoc.), May 1943.

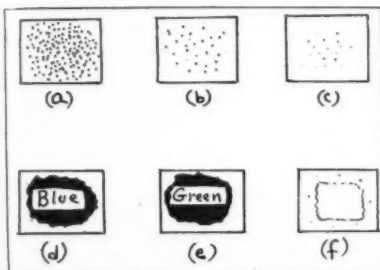


Fig. 1. (a) Positive reaction for blood in urine (250 cells per cc.) results in many blue dots. (b) Positive reaction for blood in urine (50 cells) shows a lesser number of fine blue dots. (c) Positive reaction for a very small amount of blood in the urine (10 cells per cc.). (d) Reaction due to iodides in the urine is a deep, blue color throughout. (e) Reaction due to bromides is a greenish-blue coloration. (f) A negative test appears as a light yellow.

Wound Therapy by Use of Anti-Bacterial Substances

Clinical trial was started in certain infected wounds which local treatment with the sulfonamides had failed to help appreciably. Urea and one of the sulfonamides in solution were tried in osteomyelitis, infected surgical and traumatic wounds, streptococcal and staphylococcal sinuses and one case of thoracic empyema, all of which responded dramatically. The method by which the drug was applied was dependent upon the nature of the wound. In some cases the solutions previously mentioned were applied as wet packs and in others crystals were used. It was our impression that the presence of urea in these wounds

aided the successful elimination of infection not only by virtue of the higher local concentration of sulfonamide which it makes possible, but by dissolving necrotic cellular protein, pus, and fibrin which hinder the penetration of the sulfa drug to the deeper sites of infection. It was also apparent that urea inhibits the inactivation of the sulfonamides, which results from the presence of large amounts of foul pus and necrotic cellular protein. Our final drug of choice in these clinical trials was sulfanilamide, partly because of its very high solubility in urea but also because we believe that the best results were obtained with sulfanilamide, although we used sulfathiazole, sulfapyridine and later sulfadiazine and sulfaguanidine when these became available.

1. It appears that urea and certain phenols act synergistically with sulfanilamide to produce inhibition of bacterial growth in concentrations far below the lowest effective bacteriostatic level of each alone.

2. Urea not only aids the bacteriostatic effectiveness of sulfanilamide but it spares the sulfonamide from chemical conjunction with albumin and its degradation products and from inactivation by para-aminobenzoic acid.

3. Urea greatly aids the transportation of sulfanilamide through both living and dead tissue at a far greater rate than these substances are capable of diffusing by themselves.

4. The solubilizing effect of urea on sulfanilamide, its inactivation of sulfonamide inhibitors and the synergistic bacteriostasis of certain phenols with sulfanilamide suggest that the advantages observed experimentally with mixtures of these three compounds merit extensive clinical trial.—L. A. McCLINTOCK, M.D., in *Naval Med. Bull.*, July, 1943.

[The studies reported in the foregoing paper were made possible by a grant from White Laboratories. Investigation of antibacterial mixtures, such as that described, is still in progress. It is anticipated that, within a matter of months, a superior chemotherapeutic agent for local treatment of infected wounds will have been developed and made available to physicians.—Ep.]

CLINICAL MEDICINE, long my favorite periodical both for articles and advertisements, has scored again. It is a splendid publication and you may rest assured that I boost it to my professional brethren.—Dr. P. F. McR., Mo.



THUMBNAIL

THERAPEUTICS

Complications of Hemorrhoid Injection

• Injection of hemorrhoids occasionally causes an ascending thrombosis of the superior hemorrhoidal vein. For several days, the patient feels pressure and fullness in the pelvis. On digital examination a sensitive leathery thickness may be felt extending 2 to 3 inches upward from the site of injection.

Rarely, an embolus into the portal system, notably into the liver, may occur. *J.A.M.A.*, Apr. 17, 1943.

Five Percent Saline Enema

• Hypertonic saline enemata produce a more thorough cleansing of the bowel than any other type of enema. We have used them to remove gas preliminary to taking x-rays of the abdomen, and pre- and postoperatively. Roentgenograms show that saline enemata cause an emptying of the small bowel; experiments show that there is a marked increase in the activity and tone of the small intestine. Magnesium sulphate and glycerin, soap suds and other enemata do not produce this increased tonicity and emptying of the small bowel. Quantities of 1,000 cc. (roughly one quart) were most effective. — H. E. CARLSON, M.D. in *South. Med. J.*, May 1943.

Histamine for Dermographia and Urticaria

• The subcutaneous injection of histamine in gradually increasing doses is often effective in the treatment of urticaria and dermographia (scratching skin results in wheals along line of scratch). — LEO H. CRIPPEL, M.D. in *Penn. Med. J.*, May 1943.

Sulfanilamide for Inflamed Hemorrhoids

• Inflamed, edematous hemorrhoids, treated with sulfanilamide orally, return to normal in four days. The dosage is 40 to 60 grains daily. — H. MACLEAN, M.D. in *Med. World (Lond.)* Mar. 5, 1943.

Treatment of Trachoma

• Trachoma is best treated by giving 40 grains daily of sulfanilamide orally. Local instillation is not as effective. — E. E. N. T. M., Mar. 1943.

Tar for Eczema

• The most valuable single agent, x-rays excluded, is crude coal tar paste, made up as:

Crude coal tar 2 to 5 percent
Lanolin, sufficient to mix
Zinc oxide 2 to 5 percent

Petrolatum enough to make up.

Infantile eczema and eczema of the legs respond rapidly to this ointment. It works well in the presence of moisture and rarely causes irritation. Secondly infected eczemas should be treated with antiseptics (boric soaks) before tar is used. — T. S. SAUNDERS, M.D. in *Northwest. Med.*, May 1943.

Morphine Given Orally

• A hypodermic tablet of morphine, dissolved completely in a tablespoon (one ounce) of water, and taken with one or two glasses of water, will begin to exert its effects within 2 or 3 minutes. — DAVID DAVIS, M.D. in *J.A.M.A.*, Apr. 21, 1943.

Glove Powder Peritonitis

• Before putting the gloved hand into a wound or into the abdominal cavity, be sure to wash off the talc powder which is usually applied during sterilization of gloves. Talcum powder (magnesium silicate) irritates and may cause foreign body granulomata, peritoneal adhesions, intestinal obstruction, nonhealing sinuses and incisions, painful and itching scars. — F. M. DOUGLASS, M.D., Scientific Section, *A.M.A. Meeting* 1942.

Cold for Frost-Bite

• Frost-bite should be treated by gentle cleansing, application of sulfadiazine powder, one thickness of gauze and vaseline and the use of ice bags around the frozen part. Pain is quickly relieved when the tissues are thoroughly cooled. — F. M. ALLEN, M.D. in *N.Y.S.J.M.*, May 15, 1943.



DIAGNOSTIC POINTERS

Cigarette Smoking Sterility Factor

• Cigarette smoking may sometimes be responsible for sterile mating. In one patient, smoking caused death of spermatozoa.—L. G. PHILLIPS, M. D., in *Hawaii Med. Jour.*, May-June, 1943.

Abdominal Punctures for Perforation Diagnosis

• Perforation of an abdominal viscus often results in a picture of shock, upper abdominal pain and cyanosis which closely mimics acute coronary closure. The insertion of an aspiration needle, after the injection of procaine solution, may result in the passage of gas, gastric contents or fecal material.—I. KROSS, M.D. in *Am. J. Dig. Dis.*, Aug. 1943.

Constipation and Mucous from Rectal Cancer

• Mucous discharge and constipation are early symptoms of rectal carcinoma. Blood in the stools and flatus are less common and later symptoms.—*Prescriber (Eng.)*, Sept. 1943.

Spinal Puncture in the Office

• Every patient with syphilis should have a spinal puncture during the course of treatment. This diagnostic puncture can be safely carried out in the office. A rest period of one-half hour may be advised afterward.—W. B. LONG, M.D., in *N.Y.S.J.M.*, Jan. 1, 1943.

(Spinal puncture headaches are rare when the physician (1) prevents pain by using novocaine solution infiltration before inserting the needle, (2) uses a small gauge needle, such as a gauge 19 or 20, flexible, sharp, stainless steel needle and (3) withdraws only 8 or 10 cc.—Ed.)

Percussion

• I percuss in from the axilla, and when I obtain the area of relative dullness, I put the tip of my finger in the intercostal space and if I feel the heart beat, I know my percussion technique is all right.—DR. D. J. GLOMSET, M.D.

Early Signs of C.N.S. Syphilis

• Urinary incontinence, migratory or radiating pains, transitory visual disturbances, diplopia (double vision) and changes in personality are early symptoms of central nervous system syphilis.—H. R. CARTER, M.D. in *Rocky Mt. Med. J.*, Nov. 1943.

Cervicitis Symptoms

• Vaginal discharge, dysmenorrhea, dyspareunia, arthritis, iritis, sterility, bladder and urinary tract disturbances, menorrhagia and hypermenorrhea may be caused by cervical lesions. "Cystitis" symptoms appear when inflammation extends from the lymphatics of the cervix to the base of the bladder (trigonitis). The cervix may act as a focus of infection.—H. E. SCHMITZ, M.D. in *Med. Clin. N. Am.*, June 1943.

Popliteal Bursitis and Undulant Fever

• The finding of inflamed bursa in the popliteal space may indicate that brucellosis (undulant or Malta fever) is the cause.—HAROLD J. HARRIS, M.D. in *J.A.M.A.*, Aug. 21, 1943.

Rectal Bleeding

• Dr. Stuart T. Ross states that chronic or subacute haemorrhagic diarrhoea is likely to signify, in the following order: (1) chronic ulcerative colitis; (2) carcinoma; (3) amoebic dysentery. With haemorrhoids, fissure and fistula the blood is not usually mixed with the stool, and since the site of these lesions is low, very little, if any, mucus is present in the stools. When mucus as well as blood is present, it is probable that something more than haemorrhoids exists.—*Med. World (Lond.)*, Oct. 22, 1943.

Exophthalmos in Nephritis

• Exophthalmos or "stare" has been noted in 50% of patients with chronic nephritis. The eyes appear much as they do in exophthalmic goiter.—F. M. HANES, M.D. in *J.A.M.A.*, Apr. 3, 1943.

Malaria vs. Cerebral Lesion

• Stupor and coma are the most common evidence of nervous system involvement with falciparum malaria. Convulsions may occur. Any patient who has been in the tropics or deep South, or who may have contracted malaria, should have a blood smear examined.—H. MOST, M.D. in *J.A.M.A.*, Jan. 8, 1944.

NEW BOOKS

Any book reviewed in these columns will be procured for our readers if the order, addressed to **CLINICAL MEDICINE**, Waukegan, Ill., is accompanied by a check for the published price of the book.

TEXTBOOK OF MEDICINE

Cecil

A TEXTBOOK OF MEDICINE. Edited by Russell L. Cecil, A.B., M.D., Sc.D., Professor of Clinical Medicine, Cornell University Medical School; Attending Physician, New York Hospital; Visiting Physician, Bellevue Hospital, New York City. Associate Editor for Diseases of the Nervous System: Foster Kennedy, M.D., F.R.S.E., Professor of Clinical Neurology, Cornell University Medical College; Attending Physician, New York Hospital; Visiting Physician in Charge, Neurological Service, Bellevue Hospital; Consulting Physician, New York Neurological Institute. Sixth Edition. Revised and entirely reset. 1,566 pages; 195 illustrations. 1943. Price, \$9.50. Philadelphia and London: W. B. Saunders Company.

Cecil's text is rapidly becoming the standard authority on medicine, as "Osler" was a few years ago.

The 150 contributors have covered the various aspects of internal medicine very thoroughly, thus giving the advantage of various views without the gaps usually left unwritten in a text by many authors. The new page makeup with type set in two columns is much easier to read. The book itself has become larger and much more complete, including new articles on virus pneumonia, salmonella infections, contact dermatitis (a tremendous problem today), aviation medicine, seasickness and air sickness, undernutrition, pathologic physiology of circulatory failure and cardiac pain, circulatory collapse and shock, rheumatic heart disease, senile osteoporosis, Friedlanders bacillus infections and Hirudinea.

In addition, there are 40 new revisions and introductions to topics already presented.

The number of illustrations are being increased. One picture will tell more, and be more easily remembered, than a thousand words. Even more clinical photographs and x-rays would be helpful.

HEALTH EDUCATION ON THE INDUSTRIAL FRONT

HEALTH EDUCATION ON THE INDUSTRIAL FRONT. The 1942 Health Education Conference of the New York Academy of Medicine. New York: Morningside Heights, Columbia University Press. 1943. Price, \$1.25.

In recognition of the intense industrialization of our population caused by the war, the 1942 Health Education Conference of the New York Academy of Medicine was devoted primarily to the consideration of problems arising from modern industrial conditions. These papers deal with the opportunities and obligations that exist for health educators and others in the industrial health field and reflect current practical experience, in war industries, in such matters as nutrition promotion, the control of physical illness, the restriction of mental disabilities and the limitation of accidents.

Health educators, industrial physicians, doc-

tors, nurses, health officers, social workers, and particularly those concerned with the health of workers will find this volume both stimulating and useful.

PROCTOLOGY

Manheim

PROCTOLOGY. By Sylvan D. Manheim, M.D., Consulting Proctologist, Rockaway Beach Hospital, Rockaway Beach, N. Y.; Consulting Proctologist, Maimonides Hospital, Liberty, N. Y.; Attending Proctologist, Sydenham Hospital, New York City; Assistant Visiting Surgeon, Sea View Hospital, Staten Island, N. Y.; Adjunct in Surgery for Rectal Diseases and Surgeon in Charge of Rectal Clinic, Mt. Sinai Hospital, New York City. Oxford Medical Outline Series. London, New York, Toronto: Oxford University Press. 1943. Price \$2.00.

This short, concise outline should prove of interest to the general practitioner as well as to the student. It is not intended to replace textbooks, but to serve as an aid in their use. The outline form permits important facts to be given and controversial points to be omitted. The blank pages permit the student to supplement the text with his own notes and drawings.

The anatomy of the anus and rectum, history and examination, anesthesia, congenital malformations, cryptitis and papillitis, anal fissure and anal ulcer, anorectal abscess and fistula, hemorrhoids, pruritis ani and other related topics are presented in logical form.

This handy volume is of real value to a physician who wishes to review his knowledge of the subject, as he can recall each topic mentally and then check to see if the important details have been remembered. Also, he can quickly review recent developments in diagnosis and treatment.

The only criticism which might be made of this statement related to ischio-anal abscess, "Incise widely over the fluctuant area." This may lead the inexperienced physician to delay incision until fluctuation appears, instead of draining at once.

MANUAL OF FRACTURES

Shaar and Kreuz

MANUAL OF FRACTURES: Treatment by External Skeletal Traction. By C. M. Shaar, M.D., F.A.C.S., Capt. Medical Corps, United States Navy, and Frank P. Kreuz, Jr., M.D., F.A.C.S., Lieutenant Commander, Medical Corps, United States Navy. 300 pages; 148 illustrations. Philadelphia and London: W. B. Saunders Company. 1943. Price, \$3.00.

This well illustrated handbook describes and shows clearly how to apply pins, the Stader reduction and fixation splint, errors in the treatment by external fixation, causes of pin seepage, shock in fractures, delayed union and non-union and then proceeds to describe each type of fracture separately.

The book is especially written with the need of the base surgeon or the navy surgeon in mind as these applicances can be used where open reductions cannot be done and do not incapacitate the patient as a heavy cast or traction device would. The use of external fixation for jaw fractures permits the patient to eat, to vomit when needed, to readily spit out excessive mucous and so on.

The advice is very practical, especially as to placement of pins and avoidance of pin seepage (as much as possible). Many civilian fractures would be benefited if held in the Stader splint.

The sketches, photographs and x-rays clearly show the methods of handling each of the common fractures.